



Spectral Gamma-Ray Borehole Log Data Report

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Borehole

40-06-05

Log Event A

Borehole Information

Farm : <u>S</u>	Tank : <u>S-106</u>	Site Number : <u>299-W23-55</u>
N-Coord : <u>36,082</u>	W-Coord : <u>75,827</u>	TOC Elevation : <u>663.85</u>
Water Level, ft :	Date Drilled : <u>04/1952</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>150</u>	

Borehole Notes:

This borehole was drilled in April 1952 to a depth of 150 ft using 6-in. casing. According to the drilling record, the borehole casing was perforated with five holes per foot from 40 to 100 ft, but the drilling record does not indicate if the borehole was grouted. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. The top of the casing, which is the zero reference for the SGLS, is approximately flush with the tank farm grade. The current total depth of the borehole, as measured with a steel tape, is 140.7 ft below the top of the casing. The casing perforations may have allowed loose sand in the formation to infiltrate into and accumulate at the bottom of the borehole, causing the apparent discrepancy between the historical and present-day depth of the borehole.

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>05/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>06/26/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>140.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>88.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>
Log Run Number : <u>2</u>	Log Run Date : <u>06/26/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>7.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>
Log Run Number : <u>3</u>	Log Run Date : <u>06/28/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>89.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>6.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

40-06-05

Log Event A

Analysis Information

Analyst : E. Larsen

Data Processing Reference : P-GJPO-1787

Analysis Date : 03/21/1997

Analysis Notes :

This borehole was logged by the SGLS in three log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclide Cs-137 was detected in this borehole. The presence of Cs-137 was detected only at the ground surface with a concentration of 9.6 pCi/g. However, this is not an accurate concentration value because the source-to-detector geometry at the top of the borehole casing differs from source-to-detector geometry used in the calibration.

The KUT log plots show a peak in the KUT concentrations at about 48.5 ft. The K-40 and Th-232 concentration values increase significantly below about 63 ft. The U-238 concentration values gradually increase below about 73 ft. Slightly increased K-40 concentration values occur between 76 and 89 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank S-106.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.